MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2022/2023

EHM3066 – ENGINEER AND SOCIETY

(RE / TE / ME)

02 OCTOBER 2023
9.00 a.m. – 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This Question paper consists of 4 pages excluding the cover page with 4 Questions only.

2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

Question 1

(a) Biochemical cycles which are water, carbon, nitrogen, phosphorus, and sulfur cycles are important to living organisms. **Discuss** carbon cycle for the environment. [5 marks]

(b) Noise is any sound independent of loudness that can produce an undesired physiological or physiological effect in an individual, and that may interfere with the social ends of an individual or group. These social ends include all of our activities– communication, work, rest, recreation, and sleep. **Describe** five (5) solutions to solve noise pollution. [10 marks]

(c) Global Terrestrial Observing System (GTOS) mission is to provide policy makers, resource managers and researchers with the data they need to detect, quantify, locate and understand changes (especially reductions) in the capacity of terrestrial ecosystems to support sustainable development. **State** the five (5) issues of global concern. [5 marks]

(d) **State** the five (5) criteria pollutants to be measured and used to calculate the Air Pollutant Index (API). [5 marks]

Continued ...

Question 2

(a) The government laws related to occupational safety and health are mainly regulated by the Department of Occupational Safety and Health (DOSH). **Show** how these enforcement activities can be implemented by DOSH. [12 marks]

(b) Risk Management is an important skill that helps engineers meet their responsibility to the community. You as an engineer, **explain** the actions involved in safety hazard risk management. [6 marks]

(c) Hazard means a source or a situation with a potential for harm in terms of human injury or ill health, damage to property and the environment. **Interpret** the meaning of Occupational Hazards with suitable examples. [7 marks]

Continued ...

Question 3

(a) (i) Describe FOUR (4) government initiatives to boost the development of electrical and electronics (E&E) industry in moving up the value chain under Twelfth Malaysian Plan (2021-2025). [4 marks]

(ii) Suggest THREE (3) efforts for government to improve local labour force participation. [3 marks]

(b) The average annual Gross Domestic Product (GDP) growth targets by sector during the Twelfth Malaysian Plan is summarized in Table 1.

Table 1. Gross Domestic Product for each sector

Sectors	GDP rate
Agriculture sector	3.8%
Construction sector	4.2%
Mining sector	2.6%
Manufacturing sector	5.7%
Services sector	5.2%

(i) What is the strategy to accelerate the structural economic transition? [2 marks]

(ii) Demonstrate three priority areas in restoring the growth momentum in the Twelfth Malaysian Plan. [3 marks]

(c) (i) Briefly explain the industrial revolutions up to Industry Revolution 4.0. [5 marks]

(iii) **Demonstrate** why we need to have Industry Revolution 4.0 with an example. [8 marks]

Continued ...

Question 4

(a) Hydrological cycle is also known as water cycle; it is the normal water recycling system on Earth. Due to solar radiation, water evaporates generally from the sea. Water also evaporates from plant leaves through the mechanism of transpiration. As the steam rises in the atmosphere, it is being cooled, condensed, and returned to the land and the sea as precipitation. Precipitation falls on the earth as surface water and shapes the surface, creating thus streams of water that result in lakes and rivers. A part of the water precipitating penetrates the ground and moves downward through the incisions, forming aquifers. Finally, a part of the surface and underground water leads to sea. **Illustrate** a flow chart of water cycle.

[8 marks]

(b) Health and safety issues are important in engineering, management and other fields. Most professional engineering associations point out that health and safety are issues of most importance in engineering practice. Discuss the need of legal requirements in an organization to uphold safety and health. [8 marks]

(c) ChatGPT is a cutting-edge language model created by OpenAI. In Open AI's recent GPT-4 technical report (2023), one of the interesting discussions is the efforts to build in protective ethics that are in alignment with human values. Below is the case concerning the ethical problems of using ChatGPT recently:

"In late March 2023, the Italian data protection authority banned ChatGPT in Italy and opened an investigation. Italian regulators assert that ChatGPT was exposing minors to age-inappropriate content, and that OpenAI's use of ChatGPT conversations as training data could be a violation of Europe's General Data Protection Regulation."

(i) As a software engineer, you are required to consider the ethical constraints that should be put upon any AI (ChatGPT) in responding to user questions and requests for assistance. **Demonstrate** the five ethical constraints related to ChatGPT. [5 marks]

(ii) How should an AI respond if it is asked by the user to violate any of these basic ethical constraints? Briefly **illustrate** its response with an example.

[2 + 2 marks]

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